



CONSTRAINTS FACED BY CHAWKI REARING CENTRES IN TAMIL NADU

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ABSTRACT

Chawki rearing centers (CRCs) play a pivotal role in the sericulture industry by focusing on the cultivation and rearing of high-quality silkworms, known as chawki. This study investigates the primary constraints faced by CRCs across various operational aspects, including agricultural practices, labor management, technical support, and market dynamics. Key findings reveal significant challenges such as the absence of drought-resistant mulberry varieties, high capital requirements for wages, labor shortages, and inadequate technical guidance. Natural factors like climate change and pest outbreaks further exacerbate these issues, impacting silkworm health and productivity. Marketing constraints, such as price volatility and transportation costs, add to the operational complexities of CRCs. The study underscores the need for coordinated efforts among government agencies, research institutions, and industry stakeholders to address these challenges and enhance the sustainability of chawki rearing in the sericulture sector.

Keywords: Chawki rearing, Silkworms, Constraints, Sericulture, Marketing challenges.

INTRODUCTION

Mulberry sericulture comprises a series of interconnected activities including mulberry cultivation for leaves, silkworm rearing fed on these leaves to produce cocoons, and the subsequent reeling of cocoons to obtain raw silk. The success of silkworm rearing hinges significantly on the quality of young silkworms commonly referred to as 'chawki'. Specialized facilities known as 'Chawki Rearing Centers' (CRCs) cater specifically to rearing silkworms up to their second moult (Datta, 2000 and Mahesh, 2015). Over the past forty years, initiatives by the Central Silk Board (CSB) and state sericulture departments have promoted the practice of rearing chawki worms in CRCs, leaving the rearing of adult worms to farmers (Sivaprasad *et al.*, 2015 and CSB report, 2020).

Technological advancements and best practices in chawki rearing, recommended by institutions like the Central Sericulture Research and Training Institute in Mysore and the Karnataka State Sericulture Research and Development Institute in Bangalore, have significantly

boosted cocoon productivity. This approach has notably increased the national average cocoon productivity from 55 kg to 65 kg over the last decade (Rao & Kamble, 2018). Despite these advancements, studies on the adoption of technologies by CRCs and the challenges faced by CRC entrepreneurs are limited, with only a few comprehensive studies available (Bhattacharyya, 2017; Sharma and Singh, 2018). Therefore, this study aims to explore the constraints experienced by entrepreneurs managing CRCs in adopting technologies related to mulberry leaf production exclusively for chawki rearing, as well as the rearing and marketing of chawki worms.

MATERIALS AND METHODS

The present study was conducted in Tamil Nadu during the year 2017-2018. The survey was taken up in 45 CRC's from the list of chawki rearing centers collected from Directorate of Sericulture, Salem. For the study, CRC's were selected from the district of Krishnagiri, Dharmapuri, Salem, Tiruvannamalai, Tiruppur, Erode, Coimbatore,

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Dindigul, Theni and Tirunelveli. The selected respondents were contacted in person and enquired with the help of pretested comprehensive interview schedule. Information collected from sample farmers incorporated farm size, mulberry variety; extend of cultivation of mulberry, inputs used in the establishment and maintenance of mulberry cultivation, details of chawki production and constraints faced by farmers in chawki mulberry cultivation and chawki rearing. The interview was conducted to bought out constrains faced by the sample respondents in chawki mulberry cultivation, chawki rearing and marketing of chawki worms in the study area. The responses were ranked using the Garrett’s ranking technique.

The order of merit thus given by the respondents was converted into ranks using the following formula

$$\text{Percent position} = \frac{100 (R_{ij} - 0.5)}{N_j}$$

Where

R_{ij} = Rank given for i^{th} factor by j^{th} individual.

N_j = Number of factors ranked by j^{th} individual.

By referring to the Garrett’s table, the per cent positions estimated were converted into scores. Thus for each factor, the scores of the various respondents were added and the mean value was estimated. The means thus obtained for each of the attributes were arranged in descending order.

Table1. Constrains in chawki rearing garden.

Constrains in chawki rearing garden	Mean score	Rank
Lack of drought resistant variety	87.55	I
Scarcity of labour	87.13	II
High wage rate	86.88	III
Inadequate credit facilities	84.13	IV
Inadequate technical guidance	83.64	V
Lack of high yielding variety	83.48	VI
Incidence of pest and diseases	81.11	VII
Inadequate supply of cutting	80.60	VIII
Incidence of disease	80.06	IX
Scarcity of water	77.97	X

It could be inferred that majority of the respondents were facing supply constraints regarding shortage of improved or high yielding variety of mulberry, incidence of pest and diseases, planting material, scarcity of water and trustworthy DFLs sources. The constraint experienced by the farmers address their problem by advancing the cuttings or saplings of high yielding variety prior to the season to Department of Sericulture and Central Silk Board for timely through supply. The current study is clear that natural constraint like climate change ranks first and major problem expressed by the respondent. The congenial relative humidity and temperature are an essential factor of rearing of chawki worms and whenever the failure of it

The attributes with the highest mean value was considered as the most important one and the others followed in that order. The per cent position of each rank thus obtained was converted into scores by referring to tables given by Garrett.

RESULT AND DISCUSSION

The present study, it has been observed that lack of drought resistance variety is the first and as a foremost constraint which were experienced by CRC respondents. The requirement of high capital towards payment of wages and inadequate labour availability was the next major problems of CRC rearers. Lack of technical guidance was another constraint expressed by majority of the respondents. Due to the inadequate credit facility for investments towards establishment and maintenance of chawki was ranked as fourth constraint experienced by the farmer. Department of Sericulture of Government of Tamil Nadu, Ministry of khadi and village industries, Central silk board have formed several training programmes for mulberry chawki growers in all districts, as well as the formation of specific agribusiness consortium for availing loan facility for infrastructure development such as, machineries for leaf picking and chopping, silkworm rearing yard with required tools and machineries.

for example, the climate change, natural disaster, make unworthy of taking up silkworm rearing and the entrepreneur become bankrupt and drop the rearing out rightly. Incidence of pest and diseases ranked second due to young age silkworm more susceptible to pest and disease attack thus suggested that extension agencies should intensify their efforts to organize extension educational programmes like trainings, demonstrations, field days, etc., To motivate the farmers to accept and adopt the IPM practices and a special emphasis should be given to promote eco-friendly bio-control methods against insect pests of mulberry and silkworm. Further, the availability of

technical inputs should be made easy at the doorsteps of the farmers.

Lack technical guidance like knowledge on disinfectant used for chawki rearing bed and rearing house, Uzi fly control, pest and disease management practices, proper sanitization are the major constraint faced by the farmers as expressed by majority of the farmers (87.28%). Attending regular training organized by Department of sericulture would help them to solve the problem effectively. At present labour scarcity (83.11%) is a common problem due to their diversified employment opportunities. Even though they are available, they have to be paid with higher wages and hence majority of the respondents reported those as major problem. Lack of

skilled labours ranked ninth. All operations can be carried out properly only when the labourers are to be equipped with adequate technical knowledge about proper rearing activities effectively. The labourers can learn these skills only after some years of their experience and training. Maintenance of optimum temperature, aeration and sunlight is very important for producing quality worms. Many of the respondents could not do it because of lack of awareness and knowledge. The disinfectant larvae should be culled out from the beds then and there so as to prevent the infection to other healthy larvae. But majority of the farmers were not having adequate knowledge in identification of disinfectant chemical and its proper use hence lead to more infection.

Table 2. Constrains in chawki rearing.

Constrains in chawki rearing	Mean score	Rank
Climate change	87.53	I
Incidence of pest and diseases	87.51	II
Lack of technical guidance	87.28	III
Inadequate supply of quality seed	84.53	IV
Inadequate transport facilities	84.17	V
Improper sanitation	83.28	VI
Scarcity of labour	83.11	VII
High wage rate	82.80	VIII
Lack of skilled labourers for rearing	81.60	IX
High disinfectants cost	77.97	X

Table 3. Constrains in marketing of chawki worm.

Constrains in marketing of chawki worm	Mean score	Rank
Price fluctuation	87.64	I
Lack of transport facilities	84.91	II
Difficulty in supplying CRC larvae to a distant farmer	83.35	III
Lack of finance	81.60	IV
Long distance to market	78.28	V

In the present study, it was observed that majority of the respondent facing the problem related to the price fluctuation, high transportation cost due to late age farmers situated far away from chawki units and drastic price fluctuation in chawki rearing centers as marketing constraints which ranked first due to there was no standard price for chawki worms. The consortium formation will solve the problem easily through either Department of Sericulture or Central Silk Board. The second and third constraints faced by 84.91 and 83.35 per cent of the respondents were lack of transport facilities and Difficulty in supplying CRC larvae to a distant farmer and more transport cost were major problem expressed by many of the respondents. Some villages are far away from late age rearing centers and the CRCs farmers felt the difficulty to supply their chawki worms to late age rearing centers. Few

CRC respondents had the mode of transport on their own. But many of them depended only on hired vehicles like, van, tempos and buses which lead to more cost of transportation.

CONCLUSION

The study underscores significant challenges faced by chawki rearing centers (CRCs), revealing critical constraints that impede their efficiency and viability. Foremost among these is the lack of drought-resistant mulberry varieties, which hampers productivity and resilience in the face of changing climatic conditions. High capital requirements for wages, coupled with a chronic shortage of labor, further strain CRC operations. Insufficient technical guidance exacerbates these

challenges, particularly concerning disinfection protocols and pest management, necessitating enhanced training and support from agricultural extension services. Moreover, inadequate access to credit for essential investments in infrastructure compounds these difficulties. In marketing, fluctuating prices and high transportation costs pose additional hurdles, particularly in establishing standardized pricing mechanisms and ensuring efficient distribution channels to distant markets. Addressing these multifaceted challenges will require coordinated efforts across governmental, research, and industry sectors to bolster the sustainability and profitability of chawki rearing enterprises.

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REFERENCE

- Bhattacharyya, A. (2017). Impact of Technological Interventions on Sericulture Productivity. *International Journal of Sericulture*, 13(1), 45-58.
- Central Silk Board. (2020). Annual Report 2019-2020. Retrieved from csb.gov.in
- Datta, R. K. (2000). Sericulture and Silk Production. Agricultural Services Bulletin No. 136, Food and Agriculture Organization of the United Nations.
- Mahesh, P. (2015). A Study on Sericulture Industry in India with Special Reference to Karnataka. *International Journal of Research in Applied, Natural and Social Sciences*, 3(4), 29-38.
- Rao, M. R. G., & Kamble, C. K. (2018). "Sericulture: A Practical Guide. New Delhi: I.K. International Publishing House Pvt. Ltd.
- Sharma, R.K., & Singh, A.K. (2018). Challenges in Sericulture: A Comprehensive Study. *Journal of Sericulture Research*, 22(3), 102-110.
- Sivaprasad V, Himantharaj M T, Verma, S. & Mogili T. (2015). Commercial Chawki Rearing, CSRTI, CSB, Srirampura, Mysore.